

C respectively. For this device, in general, N inputs produce  $2N-1$  outputs, one of which has all N wavelengths properly routed and the rest of the outputs forming  $N-1$  pairs of complimentary beams. For example, output 1 only received  $\lambda = 830$  nm, while output 1\* receives  $\lambda = 865$  and 900 nm. By combining these pairs of complimentary beams, the full routing function is accomplished. Although  $2 \times 1$  couplers could be used to combine the beam pairs, it is well known that this type of beam combining incurs a 3dB penalty. In order to circumvent this penalty, we used two add/drop filters F1 and F2 with different passbands to re-combine the two pairs of complimentary output beams. In this application, two inputs are multiplexed onto a single output, one input being reflected by the filter and the other being transmitted through the filter.

In The Claims:

Claims 2, 3, 4, 5, 7 and 11 amend to read as follows:

2. (Amended) The improvement of Claim 1, wherein said diffraction grating is augmented by elements selected from the group consisting of coupler and wavelength selective elements to provide fully non-blocking interconnection.
3. (Amended) The improvement of Claim 2, wherein said coupler is selected from the group consisting of directional couplers and wavelength-selective couplers.
4. (Amended) The improvement of Claim 3, wherein said coupler comprises a wavelength-selective coupler which comprises an optical wavelength add-drop multiplexer.

5. (Amended) The improvement of Claim 1, additionally including a second diffraction grating position to receive outputs from said first mentioned diffraction grating.

7. (Amended) The improvement of 6, additionally including a collection optic assembly positioned to receive outputs from said second diffraction grating, and a plurality of filter modules positioned to receive outputs from said collection optic assembly.

11. (Amended) The improvement of Claim 5, additionally including at least one collection and re-direction optic assembly position to direct inputs to said first-mentioned diffraction grating, and a retro-reflector assembly position to receive outputs from said second diffraction grating and reflect certain of said outputs back through said diffraction grating.